

# Influence of Natural Environments in Spacecraft Design, Development, and Operation

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## ABSTRACT

The natural environment has a great influence on the ability of spacecraft to perform according to mission design specification. Compatibility with the natural environment is a primary factor in determining the functional lifetime of the spacecraft. The spacecraft being designed and developed today are growing in complexity. In many instances, the increased complexity also increases its sensitivity to environmental effects. Sensitivities to the natural environment can be tempered through appropriate design measures, mitigation strategies, and/or the acceptance of known risk. The design engineer must understand the effects of the natural environment on the spacecraft and its components; while having an in-depth knowledge of mitigation strategies. Too much protection incurs unnecessary expense, and often times excessive mass; while too little protection can easily lead to premature mission loss. This presentation will provide a brief overview of both the natural environment and its effects and provide some insight into mitigation strategies.